

REMARKS

Section 112 Rejections

Claims 84 and 92 were objected to because of the use of the term “LT” to denote luminous transmittance (pg. 3, ¶6 of the Official Action). This was a typographical error and the term “LT” has been corrected to “TL” in both of these claims. Accordingly, reconsideration and withdrawal of the objection to Claims 84 and 92 is respectfully requested.

Claims 82 and 90 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite (pg. 4, ¶10 of the Official Action). According to the Official Action, it is unclear what is meant by the phrase “dominant wavelength” which appears in each of these claims. Please note that the phrase “dominant wavelength” is defined on page 5, lines 12-13 of the specification. Further, each of Claims 82 and 90 has been amended to recite that the dominant wavelength being specified in these claims is the dominant wavelength *in transmission*. Accordingly, reconsideration and withdrawal of the rejection of Claims 82 and 90 is respectfully requested.

Claims 29 - 52, 61, and 69 were rejected under 35 U.S.C. §112, first paragraph (pp. 4-5, ¶12 of the Official Action). According to the Official Action, the limitations that the glazing panel has a luminous transmittance of “less than 70%” and “less than 69%” lack written support. Applicants respectfully traverse this rejection. It is not necessary for Applicants to provide examples at each possible percentage for TL. Table 1.1 has 3 examples where TL is less than 70%. Tables 1.2 through 1.5 have 29 examples where TL is less than 70%. Table 2A has 4 examples where TL is less than 70% and Table 2B has 21 examples of TL less than 70%. It is submitted that the totality of 57 examples is sufficient to provide written support.

In view of the above, reconsideration and withdrawal of the rejection of Claims 29 - 52, 61, and 69 is respectfully requested.

Claims 77 - 93 were also rejected under 35 U.S.C. §112, first paragraph (pp. 5-6, ¶13 of the Official Action). According to the Official Action, the combination of features recited in independent Claims 77 and 85 allegedly lack written support in the specification. This rejection is improper. In particular, written support does in fact exist for glazing panels having the combinations of features and characteristics recited in the claims. As set forth in the MPEP, in order to satisfy the written description requirement, a patent specification must describe the claimed invention *in sufficient detail* that one skilled in the art *can reasonably conclude* that the inventor had possession of the claimed invention. Vas-Cath, Inc. v. Mahurkar, 935 F.2d at 1563, 19 USPQ2d at 1111. See MPEP §2163. The specification conveys to one skilled in the art that the Applicants had possession of the invention defined by these claims. Further, according to the MPEP, “[t]he examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant’s disclosure a description of the invention defined by the claims”. In re Wertheim, 540 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). See MPEP §2163.03. It is respectfully submitted that the Official Action has failed to meet this burden. In view of the above, reconsideration and withdrawal of the rejection of Claims 77 - 93 is respectfully requested.

Claims 77 - 93 were also rejected under 35 U.S.C. 112, first paragraph (pp. 6-7, ¶14 of the Official Action). According to the Official Action, the specification allegedly does not provide an enabling disclosure for the invention defined by independent Claims 77 and 85. This rejection is respectfully traversed. As set forth in the MPEP, the Examiner has the initial burden to establish a *reasonable basis* to question the enablement provided for the claimed invention. In

In re Wright, 999 F.2d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993) (examiner must provide a reasonable explanation as to why the scope of protection provided by a claim is not adequately enabled by the disclosure). See MPEP §2164.04. As also set forth in the MPEP, “[t]he specification need not contain an example if the invention is otherwise disclosed in such a manner that one skilled in the art will be able to practice it without an undue amount of experimentation.” In re Borkowski, 422 F.2d 904, 908, 164 USPQ 642, 645 (CCPA 1970). See MPEP §2164.02. It is respectfully submitted that, given the level of skill in the art and the Applicants’ disclosure, one of ordinary skill in the art could have made a glazing panel having the claimed characteristics without undue experimentation. The Official Action has merely concluded without proper explanation or consideration of the technology that some experimentation would be required to practice the claimed invention. In view of the above, it is respectfully submitted that the subject matter defined by Claims 77 - 93 is enabled by the disclosure. Accordingly, reconsideration and withdrawal of the rejection of Claims 77 - 93 is respectfully requested.

Prior Art Rejections

Claims 29 - 31, 37 - 48, 50, 53 - 55, 61 - 72, and 74 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kavka (CS 239788 B1) in view of Kalbskopf et al. (USPN 4,294,868), in further view of Terneu et al.(3) (USPN 4,900,634) and Buffat et al. (USPN 5,657,149). This rejection appears on pp. 9-11, ¶20 of the Official Action.

Claims 32 - 34 and 56 - 58 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kavka (CS 239788 B1) in view of Kalbskopf et al. (USPN 4,294,868), in further view of Terneu et al.(3) (USPN 4,900,634) and Buffat et al. (USPN 5,657,149), and in further view of either Terneu et al.(1) (GB 2 234 264 B) or Porter (EP 0 174 727 A1). This

rejection appears on pp. 11-12, ¶21 of the Official Action.

Claims 35, 36, 59, and 60 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kavka (CS 239788 B1) in view of Kalbskopf et al. (USPN 4,294,868), in further view of Terneu et al.(3) (USPN 4,900,634) and Buffat et al. (USPN 5,657,149), and in further view of Terneu et al.(2) (GB 2 274 115 A). This rejection appears on pg. 12, ¶22 of the Official Action.

Claims 49 and 73 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kavka (CS 239788 B1) in view of Kalbskopf et al. (USPN 4,294,868), in further view of Terneu et al.(3) (USPN 4,900,634) and Buffat et al. (USPN 5,657,149), and in further view of Beaufays et al. (USPN 5,573,839). This rejection appears on pg. 12, ¶22 of the Official Action.

Claims 51, 52, 75, and 76 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kavka (CS 239788 B1) in view of Kalbskopf et al. (USPN 4,294,868), in further view of Terneu et al.(3) (USPN 4,900,634) and Buffat et al. (USPN 5,657,149), and in further view of Toyonaga et al. (USPN 4,859,496). This rejection appears on pg. 12, ¶22 of the Official Action.

All of the above rejections rely upon Kavka ‘788 in view of Kalbskopf as the starting point. According to the Official Action, Kavka teaches a method of manufacturing a glazing panel comprised of a vitreous substrate and a tin/antimony oxide coating layer (pg. 6, ¶13 of the Official Action dated February 27, 2002).

Preliminarily, Applicants point out that Kavka ‘788 [hereafter merely referred to as Kavka] relates to a spray coating while Kalbskopf relates to a CVD coating. There is no teaching or motivation to combine these two technologies, and no evidence that the teachings of these two technologies can be combined as surmised in the Office Action. Indeed the potential for lack of

predictability for one of ordinary skill in the art trying to recreate the spray-formed coating of Kavka by using the CVD deposition method, equipment and precursor solutions described by Kalbskopf suggests the need for undue experimentation. There is no motivation to combine the teachings of Kavka and Kalbskopf -- indeed the combined teachings do not provide any motivation to the person of ordinary skill in the art to attempt such a change and do not contain sufficient teaching to successfully enable such a change. Indeed, Kavka teaches implicitly that he can not even accurately predict the composition of the spraying solution that he needs as he must adjust the composition between 5-10% by weight (presumably by experimentation) depending upon the concrete temperature of the heated glass. Thus there is no predictability of results if the deposition method is changed from spraying to CVD as this will immediately change a number of factors such as, for example, the nature of the reactants, the initial temperature of the reactants, the reaction speed, the relative reaction rates between different components in the reactant mixture, etc.

Second, before “combining” the references, and indeed before even proposing to “modify” the references, the teachings of the reference “as a whole” must be considered, so that the modifications are not inconsistent with those teachings. Finally, care must be taken that the combination or modification is not made with the hindsight teaching of Applicants’ own disclosure.

Consider first Kavka. This reference relates to producing heat reflective layer on glass tubes for solar collection, glass bulbs, and construction sheet glass. When applied to an architectural glass it provides a low emissivity coating which allows solar energy into a room, to heat the room, but prevents the heat from “escaping” or exiting the room. This is typical of glass used in colder climates. The attached chart indicates the wavelengths of different type of visible

light and solar energy. According to the Abstract of Kavka, 60-75% of radiated energy in the region of 5-12 μm is reflected. This is all “long wave IR energy” which would be radiated from, for example, energy previously absorbed by various furnishings in a room. Further, according to Kavka, 63-85% of visible light (380-780 nm) is transmitted through the glass. A second example in the Abstract indicates slightly different transmittance and reflected energy (75-85% transmittance and 65-75% reflected).

This must be compared and contrasted with Applicants’ claimed invention. The starting point is to recognize that Applicants are solving a different problem. Applicants specification describes and teaches solar “screening” (page 2, line 12), i.e., protection against solar radiation by reflecting and/or absorption of incoming sunlight (page 3, lines 1-3).

Applicants’ Claim 29 refers first to a solar factor of less than 70%. In other words, less than 70% of the incident solar energy is either (a) transmitted through the glass and/or (b) absorbed by the glass and re-transmitted or radiated inwardly.

What is the solar factor (FS) taught by the Kavka reference? As the Office Action recognizes, it is not disclosed. The Office Action opines, relying in part on the reflected long wave IR energy, (paragraph 20, page 10, lines 6-8) that Kavka would teach a low FS. This is an incorrect conclusion. FS is a percentage of total incident energy which is either (a) transmitted through the glazing panel or (b) absorbed by the glazing panel and then transmitted inwardly away from the initial energy source. FS does not include long wave IR which may be radiated from furnishing within the room.

Since Applicants are concerned with FS and LT both less than 70%, it should be appreciated that Applicants’ goal, and Applicants’ invention, are just the opposite of the teachings of Kavka. Applicants seek to reduce the amount of light and heat energy entering and

remaining within the room (or the automotive vehicle interior). Kavka wants to keep heat energy within the room and for this reason was only disclosing the long wave IR energy portion of the spectrum. Kavka's high light transmission in the visible portion of the spectrum implies that a significant portion of the solar energy in the visible and short wave IR will enter the building to heat up the room and the interior furnishings (i.e., the solar factor will be high). Kavka then seeks to maximize the reflection in the long wave IR portion of the spectrum (he refers to reflection at wavelengths of 5 to 12 μm and reflecting heat radiation from sources with temperatures ranging from 20 to 1000° C) so as to keep the heat inside the building by preventing escape of the long range IR radiation emitted by objects inside the room.

The Office Action next suggests that it would be obvious to increase the thickness of the Sn/Sb oxide coating of Kavka to the thickness claimed by Applicants (in Claims 41, 42, 65 and 66). Again, it is submitted that there is a fundamental difference – increasing the thickness of the coating is not suggested by Kavka and would be contrary to the teachings of Kavka because increasing the thickness of the coating would decrease the light transmittance (luminous transmittance or TL). If less energy is transmitted through the panel of Kavka, there would be less energy to be absorbed and thereafter radiated by the furnishings in the room and thus an undisclosed amount of reduction in the heating of the interior of the room. This is contrary to the purpose of Kavka and there is no motivation to increase the thickness of the coating. Applicants' submit that this conclusion in the Office Action is based on a hindsight attempt to create the claimed invention by going against the teachings of the reference.

Furthermore, Kavka achieves his best results (the combination of high transmission in the visible portion of the spectrum and high reflectivity in the region of 5 to 12 μm) when using tin oxide containing fluorine. This can be seen by comparing examples 1, 2 and 3 of Kavka.

Consequently, the person of ordinary skill in the art has no motivation to take a layer of tin oxide containing antimony which Kavka indicates as giving inferior results and to use this as the basis for further developments.

In summary:

1 – there is no evidence that the teachings of spray coatings and CVD coatings can be combined without undue experimentation. (Kavka and Kalbskopf)

2 – Kavka's objective is to heat the interior of a room. To accomplish this objective, Kavka will allow as much “sunlight” into the room as possible, to heat the furnishing, which in turn will radiate heat in the long-wave IR range, and the coating (based on various factors including method of application, molarity and thickness) will reflect the long-wave IR energy (radiated from the furniture) back into the room to prevent the heat escaping.

3 – Applicants' seek to keep the heat “out” in the first instance. To this end, Applicants TL (luminous transmittance) keeps out a certain amount of visible and short-wave IR which is the “direct heat” from solar energy as reflected in the attached chart. But the solar factor (FS) is not measured by the long-wave reflected IR, which is the concern of Kavka, but rather is the percentage of the total of energy which is (1) transmitted directly through the coated panel and (2) initially absorbed by the coated panel and thereafter transmitted inwardly. This is visible and short-wave IR, since the solar energy is in the 280 nm to 2500nm range (UV, Visible and short wave IR) and does not include long-wave IR.

4 – Modifying Kavka is based on hindsight and is contrary to the teachings of this reference.

The foregoing is applicable to all pending claims.

Claim 35 can be further distinguished from the references cited in the Official Action. In

particular, the Examiner has pointed to no teaching or suggestion in the cited references to deposit a separate fluorine doped SnO₂ layer over an antimony doped SnO₂ as set forth in Claim 35. In rejecting Claim 35, the Official Action is relying upon GB 2 274 115 A (hereinafter “the ‘115 publication”) (see pp. 11-12, ¶18 of the Official Action dated February 27, 2002). The portions of the ‘115 publication being relied upon in the Official Action, however, do not teach or reasonably suggest a method of manufacturing a glazing panel as claimed comprising depositing a fluorine doped SnO₂ layer over an antimony doped SnO₂ layer. For example, whereas the ‘115 publication broadly discloses multi-layer coatings on glass substrates at page 1, lines 20-29, the specific example being relied upon in the Official Action discloses antimony and fluorine dopants in the same tin dioxide layer and not in separate layers (pg. 15, lines 1-8 of the ‘115 publication).

Further, there is evidence of non-obviousness which further distinguishes Claim 35 from the cited references. In particular, according to the specification, incorporation of fluorine and antimony into the same tin dioxide layer hinders the incorporation of antimony in the coating (pg. 13, lines 17-19 of the specification). According to the specification, reactants containing antimony and tin in the ratio of 0.028 produced a coating with an Sb/Sn ratio of about 0.057 while the same reactants plus a fluorine containing reactant in an amount of F/Sn = 0.04 gave a coating with an Sb/Sn ratio of about 0.038 (pg. 13, line 20 - pg. 14, line 3 of the Specification). This evidence of non-obviousness further distinguishes Claim 35 from the references cited in the Official Action.

CONCLUSION

All rejections having been addressed by the present amendments and response, Applicants believe that the present case is in condition for allowance and respectfully request early notice to that effect. If, however, any issues remain to be addressed in this matter which might be resolved by discussion, the Examiner is respectfully requested to call Applicants' undersigned counsel at the number indicated below.

In this regard, an interview is expressly requested.

Respectfully submitted,

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Definitions: visible light and solar energy

